

Photos: Top: Ontario Tourism (Feb. 25, 2009)
Bottom: Martin Sneary

Healthy Great Lakes, Strong Ontario

**Talking with Ontarians about
Protecting, Restoring, Using and
Enjoying the Great Lakes**

Discussion Paper



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A map illustrating the watersheds of the Great Lakes.
Source: Ontario Ministry of Natural Resources

A Message from the Ministers

The Great Lakes are vital to our way of life. Here in Ontario, we want to develop a vision for the Great Lakes to ensure that they continue to be vital for years to come.

To help us develop that vision of sustainability, we are asking for public input on what is important to the future of the lakes, for advice on the priorities of government and whether we are realistic in our expected outcomes.

This engagement process is a joint effort of our ministries of the Environment, Natural Resources and Agriculture, Food and Rural Affairs, all of which have direct responsibilities for programs that affect the lakes.

Just consider that the Great Lakes and their watersheds are home to about 98 per cent of Ontarians and that a majority of us depend on them for our drinking water. They are biologically diverse natural ecosystems that underpin our economy, agriculture, shipping, power generation, recreation and tourism and will be vital to the development of Ontario's green economy.

We can be proud of the Great Lakes' tremendous biological diversity and how they have recovered from decades of neglect. But we cannot rest on our laurels, because the lakes are facing new and serious threats.

The Great Lakes continue to be threatened by pollutants, aquatic invasive species, loss and degradation of natural habitat, and climate change, which may deplete their waters through increased evaporation.

While the waters of the Great Lakes are renewed through precipitation by approximately one per cent a year, we must recognize that our demands on the lakes, based on the assumption that the supply is limitless, may one day outstrip the ability of nature to renew them.

We believe that having a realistic vision for the lakes is a first step in ensuring that they can continue to thrive while meeting our demands on them.

That vision will influence our own policies and decisions within the Government of Ontario. It will help us in our dealings with Aboriginal communities and concerned stakeholders around the Great Lakes ranging from municipalities to conservationists and recreationists, industry, the agricultural community and the members of the public.

As a result, we will be better equipped for negotiations with the federal government on the renewal of the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA). The information we gather will strengthen our influence on international agreements between Canada and the U.S. Our role in supporting Canada in negotiations is particularly important now, with the heightened interest in the U.S. and its commitments to improving and protecting the Great Lakes.

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We look forward to your input, your ideas and your criticisms in helping ensure the Great Lakes can forever enrich our lives and the lives of those who come after us.

John Gerretsen

Minister of the
Environment



Donna Cansfield

Minister of Natural
Resources



Leona Dombrowsky

Minister of Agriculture, Food
and Rural Affairs



Introduction and an Invitation to Participate

Whenever you drop ice cubes into a summer drink, take a shower or a swim, switch on a light, eat an Ontario-grown peach, catch a fish or hike a coastal trail, you are one of the 98 per cent of Ontarians who live in the Great Lakes region and enjoy the benefits of the Great Lakes.

This year, 2009, is an important one for the Great Lakes. A combination of events is providing a unique opportunity for Ontario and its many stakeholders and Aboriginal communities to work together in planning for the future of the Great Lakes. An important first step in planning for the Great Lakes' future is for Ontario to hear from Ontarians about their vision for the Great Lakes — and what goals and strategies it will take to achieve that vision.

We have prepared this discussion paper to help as many Ontarians as possible to participate in this process.

In this paper, you will find information on:

- The importance of the Great Lakes to Ontario
- The state of the Great Lakes
- The proposed Vision, Goals and Strategies for the Great Lakes
- Questions aimed at helping us to learn more about how to keep our Great Lakes – and our Ontario – healthy and strong for our children and grandchildren
- Information resources on the Great Lakes and the topics in this discussion paper

Please remember that the questions in this paper (p. 22) are only a starting point. If reading and thinking about them gives you other ideas for keeping the Great Lakes healthy and Ontario strong, we welcome your advice and suggestions. There is no one “right answer.” Protecting the health and future of our Great Lakes will take the knowledge, wisdom and positive action of many people, organizations, Aboriginal communities, all levels of government, and others from all over the province. Regardless of how you experience our Great Lakes, we want to hear from you.

We will use what we learn through this engagement process to help make decisions about policy initiatives, agreements and actions in Ontario and to negotiate, discuss and collaborate with our stakeholders and Aboriginal communities in Ontario, other jurisdictions, and the Government of Canada. We also hope that through participation, individuals and organizations will be encouraged to begin, continue their own, or enhance activities for keeping the Great Lakes healthy and Ontario strong.

This discussion paper is available for download at the Environmental Registry website at <http://www.ebr.gov.on.ca> (Registry Number 010-6105).

The “Great Lakes” – A Definition

In this discussion paper, Great Lakes (or “the lakes”) refers to Lakes Superior, Michigan, Huron, Erie and Ontario, the rivers, streams, and four smaller lakes that connect and drain into them, their watersheds, the Ontario portion of the St. Lawrence River and the surrounding land. Four of the five Great Lakes are part of Ontario – Lake Michigan is the exception.

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Ontario has proposed a comprehensive engagement plan for Great Lakes initiatives. In addition to discussing the Great Lakes Vision, Goals and Strategies with Ontarians, Ontario will initiate a discussion with the public on the development of the proposed Water Conservation and Efficiency Strategy and regulations/policies for intra-basin transfers under the Great Lakes-St Lawrence River Basin Sustainable Water Resources Agreement, as well as proposed Phase 2 charges for industrial and commercial water takings.



**Kayakers set up camp
at Lake Superior
Provincial Park at dusk.
Photo: Ontario Tourism
(Feb. 24, 2009)**

The Importance of the Great Lakes to Ontario

Over 10,000 years ago, glaciers slowly advanced across North America, carving out valleys. When the glaciers receded and melted, these valleys filled up with melted snow and ice. The glaciers gave us a one-time, irreplaceable gift: the Great Lakes, a unique, precious and resilient resource. This ecosystem has evolved over thousands of years.

The Great Lakes are the foundation for Ontario as we know it, and all of the economic and social benefits that we enjoy. Our urban, rural, and Aboriginal communities began as settlements along its shores. Its lakes and waterways powered our industries and provided recreational opportunities to soothe our spirits.

The Great Lakes are the foundation of Ontario's and Canada's economy.

The Great Lakes sustain us in many ways. The ecological, cultural, recreational, commercial and economic benefits provided by the Great Lakes let us enjoy a high quality of life — a quality of life that exceeds anything our grandparents and great grandparents could have ever imagined. The lakes are critical to Ontario's well-being and are an astonishing resource:

- They form the largest system of fresh water on earth, accounting for nearly 20 per cent of the world's freshwater
- Three of the ten largest lakes in the world are Great Lakes
- They contain more than 22 quadrillion litres of water with a total surface area of approximately 244,100 square kilometres – nearly the same size as the United Kingdom
- They are home to more than 40 million people in Canada and the U.S. and over 98 per cent of Ontarians
- More than 3,500 plant and animal species live in the Great Lakes Basin



**The five Great Lakes as seen from space.
Photo: NASA**

The Great Lakes are a source of enormous economic benefit for Ontario. If the region were a country, it would have the second largest national economy in the world, after the U.S. and ahead of Japan:

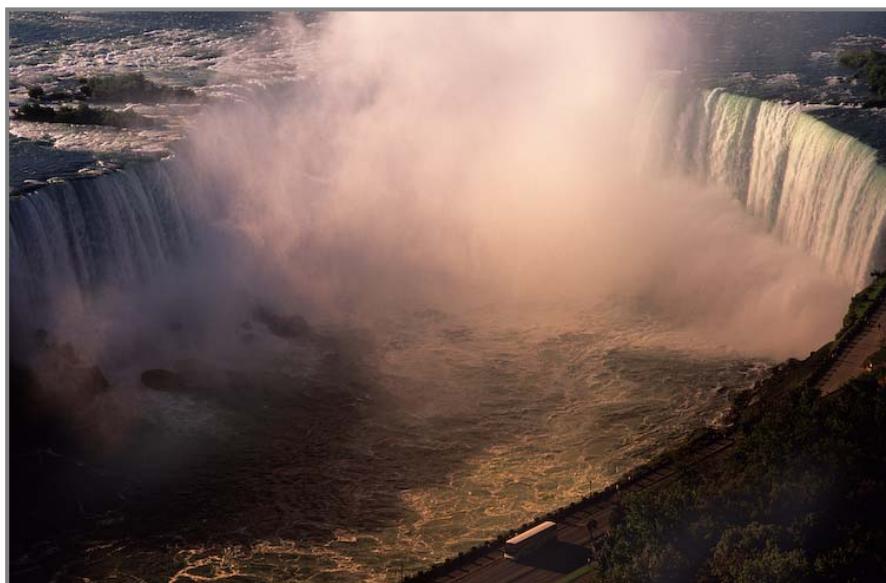
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- Over 80 per cent of the hydropower generated in Ontario is dependent upon the Great Lakes
- The Great Lakes Basin accounts for 95 per cent of Ontario's locally produced food and farm cash receipts
- Significant contributions to Ontario's economy from commercial fishing and cage aquaculture sectors
- The basin generates most of Ontario's exports – \$311-billion in 2008

The Great Lakes provide an unparalleled natural advantage for Ontario's shift to a green economy. Many of the firms involved in the development of clean technologies rely on the clean sources of water for their manufacturing processes. Renewable energy companies likewise benefit from wind and water resources that are found in the region. The quality of life that is enhanced by the amenities provided by the Great Lakes also help companies attract the highly skilled and educated workforce this emerging sector requires.

In addition to all of these economic benefits, our Great Lakes give us priceless "ecological services." We depend on them for our survival. The lakes recycle and purify the water we drink, absorb the waste we produce, provide us with food, fuel and shelter, moderate our climate, nurture our bodies and feed our spirits with their natural beauty. It's impossible to put a price on the value of these ecological services. However, recent economic studies by the independent policy and research institution, Brookings, suggested that restoring the Great Lakes delivers a 2:1 long-term return on investment. That's on top of the short-term economic stimulus benefits that are especially critical in the current economic downturn.



A view of Niagara Falls along the Niagara River, an important connecting channel within the Great Lakes system that provides Ontario with power generation and tourism opportunities. Photo: Ontario Tourism (Feb. 24, 2009)

The State of the Great Lakes

We have had some successes...

While collaborating with local, federal and binational organizations, Ontario has seen some significant Great Lakes protection and restoration successes. For example, we have seen almost a 90 per cent reduction in high-level PCB waste between 1989 and 1995 — improving fish, wildlife and human health by removing potential future sources to the environment. A major reduction in the number of sea lamprey has helped to rehabilitate Lake Superior's lake trout, leading to the economic recovery of some fisheries. Lake-based and watershed-based collaborations have helped to restore Great Lakes tributaries and reduce excess nutrients.

The health of the Great Lakes is in some respects in decline – pollution, invasive species, climate change, loss of habitat and Ontario's growing population have pushed the Great Lakes toward a tipping point

But The Great Lakes Are Still Under Stress

In spite of the successes that have been made, the health of the Great Lakes, (with the possible exception of Lake Superior), is in some respects in decline due to new and re-emerging challenges. Some scientists are warning us that the lakes are at a “tipping point” of ill health. The Great Lakes’ fundamental resilience, that made it possible for them to respond to all kinds of changes and stresses for thousands of years, is threatened. A number of stresses and threats are combining and are being exacerbated by the impacts of a changing climate. These stresses also affect Québec and our other neighbours downstream, who like us, depend on the health of the Great Lakes and St. Lawrence.



Pollution Affects Fish, Animal and Human Health

The Great Lakes were at the heart of North America’s industrial revolution. Past pollution has left behind “hot spots” of contaminated sediment in some Great Lakes harbours. Today, we have learned to be more careful with the most toxic chemicals, but we are still causing pollution that ends up in the lakes:

Following a storm, a highly turbid mix of stormwater and wastewater is deposited into Lake Ontario.

Photo: Toronto Region Conservation Authority

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- Too many Great Lakes fish are still too contaminated for us to eat safely
- Newer chemicals, like flame retardants and pharmaceuticals, may be affecting our fish and wildlife
- Stormwater runoff carrying construction sediment or products like fertilizers, frequently gets washed into the lakes and degrades water quality on an ongoing basis

Invasive Species Have Radically Altered Great Lakes Food Chains and Processes

Invasive species (like zebra and quagga mussels) are the biggest factor driving unprecedented ecosystem change. They have taken over some of the Great Lakes, squeezing out native species. Important links in the natural food chain are disappearing:

- Some fish populations are in decline
- Shorelines and water intakes have been clogged by algae
- Disease-causing agents, like botulism, are killing fish and wildlife



Odorous mats of algae fouling the Lake Erie shoreline in 2006.
Photo: Ontario Ministry of the Environment

Habitat Loss and Degradation is a Pressing Concern

Great Lakes Basin aquatic ecosystems continue to be altered by urban sprawl and human activities, resulting in the loss, fragmentation or degradation of many habitats, and threatening the species they support. This means:

- Too few spawning and nursery areas to meet the needs of native species of fish, such as American eel, Atlantic salmon, lake trout, coaster brook trout, lake sturgeon and walleye
- Competition for habitat, predation and disruptions to food webs by aquatic invasive species



Shoreline hardening in Toronto on the Lake Ontario shoreline. *Photo: Waterfront Toronto*

- Loss of coastal wetlands, floodplains and riparian buffers that provide fish and wildlife habitat, as well as flood control and water quality functions.

Individually, and cumulatively, these factors are threatening the health, strength and resiliency of the Great Lakes. To overcome them, we, as individuals, communities and governments, need to take positive steps to make sure that our children and grandchildren inherit a healthy, strong Great Lakes Basin Ecosystem.

We need to continue to take action and change how we relate to the Great Lakes so we don't inflict irreversible damage on this precious resource of ours. The good news is that in Ontario, we are in an excellent position to take positive action to help the lakes regain their health and resiliency.

People and governments in Ontario have been working on Great Lakes issues for over 50 years. We have gained a lot of wisdom and expertise. We have a track record of success to build upon. We have, or can develop, the necessary scientific knowledge. Plus, Ontario has many well-established collaborative arrangements in place with private and public sector organizations and with other jurisdictions. We work with conservation authorities, Aboriginal communities, non-governmental organizations, municipal governments, the Government of Canada, U.S. Government agencies, and many internationally recognized researchers in Ontario's universities and colleges who are building our understanding of the Great Lakes.

The Great Lakes Are Vulnerable to Climate Change

Climate change is of particular concern in the Great Lakes because it has the potential to compound many of the existing sources of stress on the Great Lakes ecosystem. The lakes are also vulnerable to climate change because they are renewed through precipitation at a rate of only 1 per cent per year, making increases in evaporative loss a particular concern. Other potential climate change impacts that we may already be seeing include:

- Warmer weather causes less ice cover to form in the winter, leading to faster evaporation of Great Lakes' waters
- Extreme storms are more frequent, leading to property damage and more pollution entering the Great Lakes
- If water temperatures go too far above their ideal range, fish will be affected. Climate change will threaten the habitats of cold-water species like trout



Expanding road networks and urban development have led to considerable impacts on the Great Lakes.
Photo: Ministry of Transportation

Proposed Vision, Goals and Strategies for the Great Lakes

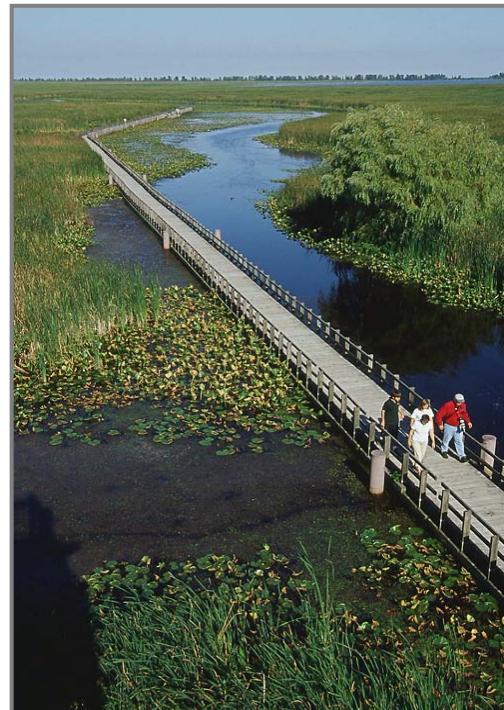
Over the years, Ontario has worked hard to keep the Great Lakes healthy. We have worked in collaboration with Aboriginal communities, conservation authorities, Canada-U.S. agencies, municipal and federal governments and other implementation partners. Together, we have all achieved a lot of success in getting rid of toxic hotspots and other pollution and in restoring species and their habitats.

Protecting our Great Lakes continues to be an important priority for Ontario. Our current activities include:

- Collaborating with other organizations and jurisdictions to restore health to contaminated sites, reducing harmful pollutants, rehabilitating fish and wildlife species and their habitats, and protecting endangered species.
- Having developed the Cornwall Sediment Strategy Administration Controls Protocol with the Mohawks of Akwesasne and others, we are now working together to implement this strategy to prevent sediment disturbance, exposure and re-suspension of contaminated sediments.
- Taking action to protect Great Lakes water quantity under the Great Lakes - St. Lawrence River Basin Sustainable Water Resources Agreement ("Charter Annex Implementing Agreement") by banning water diversions and developing water conservation and efficiency goals, objectives and programs.
- Cooperating with other jurisdictions and groups to manage shared fisheries resources and control the invasive sea lamprey.
- Enhancing relationships with farmers and local community groups to conserve soil and water to support environmental stewardship action in a productive agricultural sector.
- Working in local watersheds to protect the Great Lakes as sources of drinking water for Ontarians, through our drinking water source protection program under the *Clean Water Act*.
- Implementing a Biodiversity Strategy that protects Ontario's genetic, species and ecosystem diversity and the use and stewardship of our biological assets.
- Working with Aboriginal communities to include Traditional Ecological Knowledge in the implementation of the COA and Charter Annex Implementing Agreement.

Proposed Long-Term Great Lakes Goals

- ***Resilient ecosystem***
- ***Human health and well-being***
- ***Green, diverse economies***
- ***Sustainable natural resources***
- ***Strong communities***



A family walks along the boardwalk at Point Pelee National Park, Lake Erie.

Photo: Ontario Tourism (Feb. 24, 2009)

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In addition to these actions, the Government of Ontario has also undertaken major initiatives that will capitalize on the amenities provided by the Great Lakes Basin and contribute to the health of the ecosystem:

- Introduced the landmark *Green Energy and Green Economy Act* which would boost investment in renewable energy projects and increase conservation, creating green jobs and economic growth to Ontario
- Released the Ontario Tourism Strategy, a plan for the sustainability and growth of the province's tourism industry that identifies our water resources – including lakes, rivers, and canals – as being at the very heart of tourism in Ontario
- Invested one third of approximately \$1 billion (along with federal and municipal governments) directly into infrastructure under the first intake of the Building Canada Fund and signed the \$6.2 billion infrastructure Framework Agreement with the federal government to address Ontario infrastructure priorities through 2014

However, as important as these activities and accomplishments are, as this paper has described, the state of the Great Lakes tells us that their health is at risk.

Proposed Vision

Drawing on the province of Ontario's long history of working on Great Lakes issues and the experience of over a dozen Ontario government ministries, we have identified five potential Goals and nine potential Strategies. Together, they form a long-term Vision for what the Great Lakes could look like in the future: Healthy Great Lakes and a Strong Ontario.



A successful
fishing outing on
Georgian Bay.
Photo: Tourism
Ontario (Feb. 24,
2009)

The Goals and Strategies are a starting point for a conversation with Ontarians to set out what our province - and our many collaborators - need to do to keep our Great Lakes healthy, strong and resilient. At the end of the paper, you will find some questions about the proposed Strategies for you to consider.

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In thinking about the proposed Goals and Strategies, please keep in mind that all of them can be implemented using various kinds of tools – from policy changes to new collaborations and commitments.

Five Proposed Goals

Taking a broad look at what the Great Lakes mean to Ontario, we have identified five proposed long-term Goals. These five Goals concentrate on protecting and increasing the many benefits that healthy Great Lakes give us. The five goals are:

- **Resilient ecosystem:** The Great Lakes can respond to changes and stresses without losing important species, ecosystem functions and amenities
- **Human health and well-being:** Ontarians enjoy safe Great Lakes beaches, drinking water, food and fish, and recreational, cultural and spiritual benefits
- **Green, diverse economies:** The Great Lakes Region is a centre of economic activity and its quality of life attracts and keeps the workforce for a vibrant and innovative economy
- **Sustainable natural resources:** Resources like fish and wildlife, water quantity and energy generation potential are sustained over the long-term
- **Strong communities:** Great Lakes' communities are thriving and attractive, and practice good stewardship of the lakes

Nine Proposed Strategies

The following nine proposed Strategies are aimed at achieving the five Goals:

- Clean-up Great Lakes Hot Spots and the Legacy of Past Pollution
- Protect Human and Ecosystem Health from Toxics and Pathogens
- Restore Great Lakes Habitats and Protect Biodiversity
- Adapt to Climate Change
- Understand and Deal With Ecosystem Change
- Influence the Bi-National Agenda
- Enhance Lake-Based and Watershed-Based Planning and Action
- Increase Appreciation and Stewardship of the Great Lakes
- Develop Sustainable Great Lakes Economic Opportunities.

The next section of this paper describes each Strategy, summarizing some of the key threats and potential activities for carrying out the Strategy.

Strategy: Clean-up Great Lakes Hot Spots and the Legacy of Past Pollution

A lot of progress has been made in cleaning up toxic hot spots and contamination. This work needs to continue. Past industrial and urban activities have left some communities with expensive clean-ups to deal with. Examples of pollutants include: PAHs (polycyclic aromatic hydrocarbons), dioxins and furans, PCBs (polychlorinated biphenyls), and metals such as mercury.

Sediments contaminated with harmful chemicals continue to threaten the Great Lakes food chain, negatively affecting fish and wildlife as well as recreational and commercial fishing.

- Potential activities would focus on continuing clean-up of toxic hot spots and polluted sediment so that contaminated harbours and waterfronts are safe, healthy places for people, plants, fish and wildlife
- Existing and ongoing avenues for carrying out activities include Lakewide Management Plans (LaMPs) and Remedial Action Plans (RAPs) processes



Cleaning up contaminated sediment near Kingston.

Photo: Ontario Ministry of the Environment

Strategy: Protect Human and Ecosystem Health from Toxics and Pathogens

Ontarians can be confident that a safety net is in place so that pollutants do not end up in our drinking water, and that the water we get from our taps is among the best-protected in the world. But today's pollution sources are still having impacts on the Great Lakes – including some of our Great Lakes beaches. We need to tackle ongoing pollution from our cities, from urban sewage and stormwater, from rural septic systems, and from agriculture and industries. We also need to guard against unwanted chemicals such as pharmaceuticals being released into our lakes.

Potential activities to address these threats could include:

- Stewardship action to address stormwater that picks up pollution from lawns and roads, or runoff from fields and orchards, before washing into the lakes
- Protecting ourselves and the environment from substances of concern in consumer products like household cleaners, lawn care products, and personal care products such as soaps and cosmetics
- Keeping beaches and coastal habitats like wetlands clean and healthy

Strategy: Restore and Conserve Natural Habitats and Protect Biodiversity

The Great Lakes Basin is home to a rich diversity of fish, wildlife and plant species and their habitats. This diversity is key to maintaining a healthy natural ecosystem. It also ensures that we can continue to enjoy economic and recreational benefits from the region's resources.

Threats to Great Lakes habitats and biodiversity include:

- Loss of habitat due to urban sprawl, road and bridge-building, agricultural practices, forestry, mining, and building power dams

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- Accidental or deliberate releases of invasive species into the Great Lakes, where they can harm native species, hurt ecosystems and cause economic hardship
- Ongoing pollution
- Using Great Lakes ecosystems in ways that cannot be sustained, through improper or over-harvesting of fish, wildlife or plants, and artificial water level regulation

Efforts are underway to protect, restore and sustain the natural habitats and species that make up the Great Lakes ecosystem, but continued work is required. Potential activities could include:

- Protecting and restoring Great Lakes coastal wetlands, native fish species, and other parts of the Great Lakes ecosystem
- Securing important natural heritage features and landscapes
- Completing and taking stewardship action on biodiversity plans for each Great Lake
- Putting in place a more environmentally friendly water level regulation plan for Lake Ontario



**Ontario Stewardship
Ranger crews
rehabilitate fish
habitat in a Lake
Huron Basin tributary.
Photo: Ontario
Ministry of Natural
Resources**

Strategy: Adapt to Climate Change

The Great Lakes are able to absorb some of the impacts of climate change. However, they are vulnerable to climate change which could make some conditions (like excessive nutrients and aquatic invasive species) worse.

Threats to the Great Lakes from climate change include:

- Estimates suggest that climate change has the potential to lower water levels in the Great Lakes by as much as one metre by 2030. This will affect shipping, recreational boating, wetlands/habitat protection and remediation, and shoreline property owners' use of their docks and water intakes
- More big storms that can overwhelm municipal stormwater and wastewater infrastructure and bring surges of pollution into the lakes

- Climate change could also contribute to nuisance algae growth, and could speed the uptake of pollutants into the food chain

We are all pioneers in dealing with these challenges, but good work is already underway in Ontario to help us and our lakes be less vulnerable to climate change. These activities include:

- Taking action on commitments under the Charter Annex Implementing Agreement, including an assessment of cumulative impacts of water takings while considering the potential impact of climate change
- The province is currently reviewing its guidelines for managing storm water to take climate change into account
- In 2007, Ontario negotiated a new goal for the COA to increase understanding of climate change and committed to helping Great Lakes communities begin to prepare for its impacts
- The province appointed an Expert Panel on Climate Change Adaptation in 2007. The panel will be submitting a report to the Minister of the Environment on their work.
- The province has consulted with Ontario's coastal communities and identified a set of key actions to support community-level engagement for dealing with climate change



Sediment erosion after a storm on land cleared for construction.

Photo: Toronto Region Conservation Authority

Ontario has set and is working towards ambitious but realistic targets to reduce greenhouse gas emissions by six per cent below 1990 levels by 2014, 15 per cent by 2020, and 80 per cent by 2050. Many of the strategies outlined in this paper to restore and clean up the Great Lakes – from water conservation measures to low impact development and greening the economy – will also help decrease our emissions of greenhouse gases.

Potential activities could include:

- Translating our knowledge and understanding of projected impacts of climate change into action
- Providing information, tools and resources to municipalities and communities
- Sustaining past gains in environmental protection and restoration to allow ecosystems to adapt to climate-induced changes
- Mainstreaming climate change adaptation considerations into plans, policies and programs

These activities provide the foundation for helping our Great Lakes to be healthy and strong in spite of climate change, so that Ontario's communities, economy and ecosystem can flourish.

Strategy: Understand and Deal with Ecosystem Change

Unprecedented changes are taking place in our Great Lakes ecosystem.

Threats to the Great Lakes include:

- Harmful aquatic invasive species that have entered the Great Lakes
- Climate change
- Growing populations (inside and outside the Great Lakes Region)
- Build-up of multiple stresses and challenges, the effects of which are hard to predict

Potential activities could include:

- Continuing to build Ontario's scientific capacity
- As resources permit, making investments and increasing our collaborations (sharing best practices and expertise) with other governments and experts to understand the scope and implications of ecosystem changes so that all of us – individuals, organizations and governments — are in a better position to respond to the current changes, and to predict and prevent future problems
- Factoring new understanding into decision making at all levels

16 harmful aquatic invasive species cost Canada \$5.5 billion annually in direct and indirect costs. There are now over 180 aquatic invasive species in the Great Lakes.



The picture on the right shows invasive mussels blanketing the Lake Ontario lakebed in 2003, compared to the photo on the left taken of the Lake Ontario lakebed in 1981.

Photos: Ontario Ministry of the Environment

Strategy: Influence the Bi-National Agenda

Many Great Lakes issues have no borders. No one agency or jurisdiction has the ability to do it all. Cross-border cooperation and action is essential to protect the Great Lakes.

Current threats requiring inter-jurisdictional cooperation and action include:

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- The entry and spread of aquatic invaders/invasive species (like aquatic disease organisms, zebra mussels, sea lamprey and Asian carp)
- Climate change
- The need to conserve shared resources like water and fish
- Threats to natural habitats and biodiversity
- Ongoing pollution

Ontario has a strong history and tradition of working with other governments to protect our Great Lakes. Proposed continued actions are:

- Working with the Canadian, U.S., Quebec, and state governments through initiatives like the Great Lakes Water Quality Agreement (GLWQA), Binational Toxics Strategy, and binational institutions such as Great Lakes Fishery Commission and the Great Lakes Commission (GLC)
- Publicly confirming our expectations for Canada and the U.S. to renew and strengthen the GLWQA
- Participating in the International Joint Commission's Great Lakes advisory boards, the Great Lakes Binational Executive Committee (BEC), the GLC, and the Regional Body of premiers and governors overseeing implementation of the Charter Annex Implementing Agreement
- Strong partnerships to deal with binational Areas of Concern, Lakewide Management Planning and research of importance across the basin
- Working with binational organizations to ensure lake levels are addressed, factoring in the potential impacts of climate change
- Working in collaboration with stakeholders and others, including Aboriginal communities, conservation authorities, and municipalities, on continuously improving lake-wide management planning and actions to take into account changing ecosystems and the state of our fisheries and biodiversity

Strategy: Lake-based and Watershed-Based Planning

Strengthening lake-based and watershed-based planning is essential to protect sensitive and significant features of lakes and watersheds (e.g., fish and wildlife habitats, natural heritage features such as wetlands, shorelines) and to make sure that future decisions about development take the stewardship of water, landscapes and natural heritage features into account. Local collaborators that reflect many different voices and groups and know their communities, would have an especially critical role in carrying out this proposed Strategy. This includes collaborators that live upstream from the lakes themselves. Activities taking place upstream – sometimes even a significant distance from the lakes – can play a significant role in the health of a lake ecosystem. It also includes Québec and our other neighbours downstream from us, who share our interests in a thriving Great Lakes Basin Ecosystem.

Threats include:

- Degradation of water quality in the nearshore zone of the lakes
- Fish habitats and water balances that are at risk
- Toxic hot spots and contamination in the lakes
- Non-point sources of pollution

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Potential lake-based and watershed-based planning activities could include:

- Identifying priority watersheds for each Great Lake and taking stewardship actions to address non-point source loadings in those watersheds
- Implementing Ontario's Biodiversity Strategy, including a focus on natural heritage protection and stewardship in southern Ontario
- Linking into the watershed approaches used in drinking water source protection planning and other processes



Attendees at a Lake Huron Binational Partnership information session in November 2008.

Photo: Randy French, French Planning Services Inc.

Strategy: Increase Appreciation and Stewardship of the Great Lakes

It's human nature to take care of the things that we understand and value.

Education and information programs can help individuals, families, community groups, municipalities and others learn more about the Great Lakes, how important they are to the quality of life that we all enjoy, the threats the Great Lakes face and how we can all help to protect them. Our current discussions with Ontarians about the proposed Great Lakes Vision, Goals, and Strategies is one of the ways that we hope Ontarians can learn about the Great Lakes and actively participate in setting priorities to keep them healthy, strong and resilient. Increasing appreciation and stewardship of the Great Lakes is a Strategy where everyone can play a role, starting with activities that take little or no money — just a different way of thinking about our world and remembering that what we do on the land has an effect on the water.

Surveys tell us that many Ontarians really do not know much about the Great Lakes and how important they are to us.*

* Special thanks to Great Lakes United (GLU) for making this survey data available

Potential activities could include:

- Enhancing learning about our Great Lakes natural and cultural heritage
- Supporting public participation in activities to protect, restore and conserve the Great Lakes
- Promoting the Great Lakes, to Ontarians and to potential visitors from other parts of Canada and abroad, as tourist destinations and as a source of many recreational activities
- Helping Ontarians live more sustainably (e.g., by conserving water)

Strategy: Develop Sustainable Great Lakes Economic Opportunities

This strategy focuses on sustaining the many economic benefits that our Great Lakes have given us and supporting Ontario's shift towards a green and sustainable economy.

The Great Lakes are a part of our daily lives. Great Lakes waters support most of Ontario's agricultural production and most of the province's energy generation (e.g., hydro power, cooling nuclear plants, wind power generation). Great Lakes commercial, recreational and Aboriginal fisheries are economically, socially and culturally important to the province. Many rural and urban communities depend on lake- and water-based tourism. The manufacturing industry relies on the high quality of freshwater provided by the lakes. Restoring and protecting the Great Lakes is important to sustain these many economic benefits.

Today, the Great Lakes region has the research centres, skilled workforce and technological sophistication to become a centre for a green economy. Ontario is supporting this transition by investing, and encouraging investment, in green industries and sectors. For example, with its proposed *Green Energy and Green Economy Act* Ontario will become a leader in clean, renewable energy creation and conservation, creating thousands of jobs within a world-class green industrial sector. Under the Toxics Reduction Strategy, Ontario is requiring industries to develop pollution reduction plans. Ontario's agriculture and food sectors are increasingly developing bioproducts to replace plastics, petrochemicals and other non-renewables. Measures aimed at water and energy efficiency help improve the productivity and competitiveness of businesses.



A young Ontarian enjoys some cool and refreshing water on a summer day.

Photo: Ontario Ministry of the Environment

Healthy Great Lakes, Strong Ontario

Discussion Paper

The Great Lakes region is also an important centre for water and wastewater treatment knowledge, skills and technologies. Maintaining and building upon existing strengths in this sector will provide additional economic opportunities.

Shifting to a cleaner, greener economy will be important to the long-term health of the Great Lakes.

Potential activities could include:

- Promoting Great Lakes recreation and tourism
- Applying water conservation and efficiency initiatives
- Taking advantage of and promoting the benefits that can be achieved through the water technology sector
- Quantifying and valuing the economic benefits of the lakes



Grapes are harvested in Prince Edward County on Lake Ontario.
Photo: Ontario Tourism (Feb. 25, 2009)

Conclusion

Thank you for taking the time to read and think about the information and questions (see next page) in this discussion paper. Your participation in Ontario's Great Lakes engagement process will help the government to make decisions and find solutions to the challenges and stresses facing the Great Lakes so they stay healthy, strong and resilient.



A bullfrog, one of over 3,500 species of plants and animals that reside in the Great Lakes Basin.

Photo: Brian Gratwicke

Questions to Consider

The discussion paper sets out proposed Goals and Strategies for protecting the Great Lakes:

1. To what extent do these Goals and Strategies deal with the stresses and threats that your Great Lakes community faces, as well as the benefits that you want to protect?
2. Are there other Goals for the Great Lakes that you would like to see?
3. What other Strategies should be identified for action to protect the Great Lakes? What do you think is missing?
4. Do you see the role of government changing with this list of Strategies? Do you see the role of local and Aboriginal communities, business, environmental organizations changing based on this list of Great Lakes Strategies?
5. How could the province best act on delivering these proposed Strategies with its stakeholders and others, including Aboriginal communities: for example, education and outreach, voluntary measures by industry, municipal/provincial/business/other, and agricultural stewardship programs, etc.?
6. In your view, are some Strategies more important in achieving a healthier Great Lakes ecosystem than others and, if so, which ones and why? What do you see as the Strategies for your Great Lake community and the whole Great Lakes ecosystem?
7. Are there some Strategies that in your view should be deferred, modified or emphasized at this time given the current state of the economy in Ontario and, if so, which ones?
8. What do you think is the top proposed Strategy for the Great Lakes, and why?
9. Is there any Strategy that in your view might make matters worse for either the environment or the economy or both?
10. What factors in your view are outside the control of the province in protecting the Great Lakes from harm? Does the proposed list of Strategies reflect these factors?
11. Recognizing that lake ecosystems take a long time to change, what do you suggest should be the first focus for action to ensure that Ontario is on a path of success in managing the Great Lakes for the benefit of all and for future generations?
12. Who, in your view, must be involved in short-term and long-term strategy setting for managing the health of the Great Lakes? What should their role(s) be?

Resources for Learning More about Our Great Lakes

Government Resources

The 2007 Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) can be found at <http://www.ene.gov.on.ca/en/water/greatlakes/coa/index.php>.

This is a three-year agreement between the Government of Canada and the provincial Government of Ontario. The Agreement lays out the responsibilities of both parties towards the restoration and protection of the Great Lakes Basin Ecosystem.

The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem: 2002 – 2007 Progress Report can be found at <http://www.ene.gov.on.ca/en/water/greatlakes/coa/index.php>.

The Progress Report describes the achievements of the 2002-2007 COA.

The Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement is available at:

<http://www.mnr.gov.on.ca/200040.pdf>

This is an agreement between Ontario, Quebec and the eight Great Lakes States (New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, Wisconsin and Minnesota). It bans the diversion of water out of the Great Lakes, requires cumulative impact assessment and water conservation planning within the Great Lakes Basin.

The Great Lakes Water Quality Agreement (GLWQA) is available at:

<http://www.on.ec.gc.ca/greatlakes/default.asp?lang=En&n=FD65DFE5-1>.

This Agreement between the governments of Canada and the United States implements the anti-pollution provision of the Boundary Waters Treaty.

To learn more about the State of the Great Lakes please use the following link:

http://binational.net/solec/intro_e.html

The State of the Great Lakes Ecosystem (SOLEC) conference is held every two years, hosted by Environment Canada and the U.S. Environmental Protection Agency. The conference consolidates information and analysis on the state of the Great Lakes Ecosystem.

To learn more about the Ontario laws and regulations that relate to the Great Lakes and water management in Ontario, please visit Service Ontario e-laws <http://www.e-laws.gov.on.ca/index.html>.

The Ontario Ministry of the Environment's website can be found at <http://www.ene.gov.on.ca/>.

The Ontario Ministry of Natural Resources' website can be found at <http://www.mnr.gov.on.ca/>.

The Ontario Ministry of Agriculture, Food, and Rural Affairs' website can be found at <http://www.omafra.gov.on.ca/>.

The International Joint Commission's website can be found at <http://www.ijc.org/>.

Healthy Great Lakes, Strong Ontario

Discussion Paper

Non-Government Resources

Prescription for Great Lakes Ecosystem Protection and Restoration

Authors: Jack Bails, Alfred Beeton, Jonathan Bulkley, Michele DePhilip, John Gannon, Michael Murray, Henry Regier, Donald Scavia

<http://www.miseagrant.umich.edu/downloads/habitat/PrescriptionforGreatLakes.pdf>

Written by experts in the field of Great Lakes science, this paper outlines the stresses facing the lakes, and what needs to be done to prevent further ecosystem degradation.

Climate Change and Great Lakes Water Resources

Author: National Wildlife Foundation

http://online.nwf.org/site/DocServer/Climate_Change_and_Great_Lakes_Water_Resources_Report_FI.pdf?docID=2442

This report synthesizes current climate change science and presents the likely impacts warming temperatures will have on the Great Lakes, people and wildlife. It also provides recommendations for curbing global warming while preserving the resilience and adaptive capacity of the Great Lakes ecosystem.

Local Investment in the Great Lakes and St. Lawrence

Author: Great Lakes Commission

<http://www.glc.org/glinvestment/pdf/local-investment-report-final-sm.pdf>

Canadian and American local governments on both sides of the lake spend an estimated \$15 billion on protection and restoration of Great Lakes waters, according to this study.

Healthy Waters, Strong Economy: The Benefits of Restoring the Great Lakes Ecosystem

Author: Brookings Institution

<http://www.cgli.org/sustainable/GrtLakesCostBenefit.pdf>

The Brookings Institution presents the findings of an in-depth study of the benefits and costs of the U.S. federal-state Great Lakes Regional Collaboration (GLRC) Strategy.

Great Lakes Blueprint: A Canadian Vision for Protecting and Restoring the Great Lakes and St. Lawrence River Ecosystem

Authors: Canadian Environmental Law Association, Canadian Institute of Environmental Law and Policy, Ecojustice, Environmental Defence, Great Lakes United, Sierra Club of Canada

<http://www.environmentaldefence.ca/reports/GreatLakesBlueprintFINAL.pdf>

Written by six environmental organizations active on Great Lakes issues, the Blueprint puts forward a vision for the protection and restoration of the Great Lakes from a Canadian perspective.

Great Lakes Public Opinion Research

Author: Great Lakes United

<http://www.glu.org/en/node/269>

Great Lakes United carried out extensive opinion polling research in 2007 aimed at gauging Ontarians' level of interest in and concern for the Great Lakes.

The Great Lakes Information Network (GLIN) website can be found at <http://www.great-lakes.net/>.